

## Transistors

## 1.5V Drive Pch MOSFET

## RZQ045P01

## ●Structure

Silicon P-channel MOSFET

## ●Features

- 1) Low on-resistance.
- 2) High power package.
- 3) Low voltage drive. (1.5V)

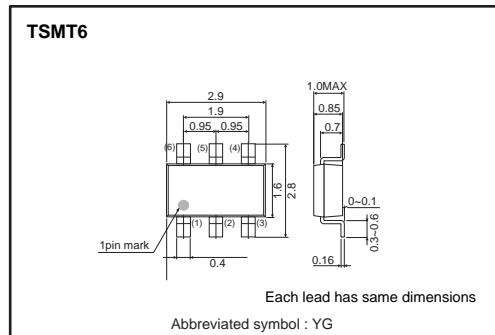
## ●Applications

Switching

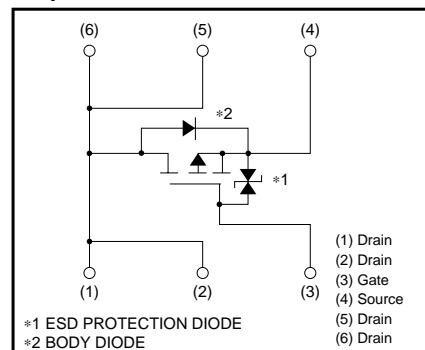
## ●Packaging specifications

Type	Package	Taping
	Code	TR
	Basic ordering unit (pieces)	3000
RZQ045P01		○

## ●Dimensions (Unit : mm)



## ●Equivalent circuit



## ●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V <sub>DSS</sub>	-12	V
Gate-source voltage	V <sub>GSS</sub>	±10	V
Drain current	Continuous	I <sub>D</sub>	A
	Pulsed	I <sub>DP</sub>	A
Source current (Body diode)	Continuous	I <sub>S</sub>	A
	Pulsed	I <sub>SP</sub>	A
Total power dissipation	P <sub>D</sub>	1.25	W
Channel temperature	T <sub>ch</sub>	150	°C
Range of Storage temperature	T <sub>stg</sub>	-55 to +150	°C

\*1 Pw≤10μs, Duty cycle≤1%

\*2 Mounted on a ceramic board

## ●Thermal resistance

Parameter	Symbol	Limits	Unit
Channel to ambient	R <sub>th(ch-a)</sub>	100	°C / W

\* Mounted on a ceramic board.

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## ●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Gate-source leakage	I <sub>GSS</sub>	—	—	±10	μA	V <sub>GS</sub> =±10V, V <sub>DS</sub> =0V
Drain-source breakdown voltage	V <sub>(BR) DSS</sub>	—12	—	—	V	I <sub>D</sub> = -1mA, V <sub>GS</sub> =0V
Zero gate voltage drain current	I <sub>DSS</sub>	—	—	-1	μA	V <sub>DS</sub> = -12V, V <sub>GS</sub> =0V
Gate threshold voltage	V <sub>GS (th)</sub>	-0.3	—	-1.0	V	V <sub>DS</sub> = -6V, I <sub>D</sub> = -1mA
Static drain-source on-state resistance	R <sub>DS (on)</sub> *	—	25	35	mΩ	I <sub>D</sub> = -4.5A, V <sub>GS</sub> = -4.5V
		—	31	43	mΩ	I <sub>D</sub> = -2.2A, V <sub>GS</sub> = -2.5V
		—	39	58	mΩ	I <sub>D</sub> = -2.2A, V <sub>GS</sub> = -1.8V
		—	50	100	mΩ	I <sub>D</sub> = -0.9A, V <sub>GS</sub> = -1.5V
Forward transfer admittance	Y <sub>fs</sub>   *	6.5	—	—	S	V <sub>DS</sub> = -6V, I <sub>D</sub> = -4.5A
Input capacitance	C <sub>iss</sub>	—	2450	—	pF	V <sub>DS</sub> = -6V
Output capacitance	C <sub>oss</sub>	—	320	—	pF	V <sub>GS</sub> =0V
Reverse transfer capacitance	C <sub>rss</sub>	—	290	—	pF	f=1MHz
Turn-on delay time	t <sub>d (on)</sub> *	—	12	—	ns	I <sub>D</sub> = -2.2A
Rise time	t <sub>r</sub> *	—	75	—	ns	V <sub>DD</sub> = -6V
Turn-off delay time	t <sub>d (off)</sub> *	—	390	—	ns	V <sub>GS</sub> = -4.5V
Fall time	t <sub>f</sub> *	—	215	—	ns	R <sub>L</sub> = 2.7Ω
Total gate charge	Q <sub>g</sub> *	—	31	—	nC	R <sub>L</sub> = 1.3Ω
Gate-source charge	Q <sub>gs</sub> *	—	4.5	—	nC	V <sub>GS</sub> = -4.5V
Gate-drain charge	Q <sub>gd</sub> *	—	4.0	—	nC	R <sub>G</sub> =10Ω
						I <sub>D</sub> = -4.5A

\*Pulsed

## ●Body diode characteristics (Source-drain) (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Conditions
Forward voltage	V <sub>SD</sub> *	—	—	-1.2	V	I <sub>S</sub> = -4.5A, V <sub>GS</sub> =0V

\*Pulsed

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## ●Electrical characteristic curves

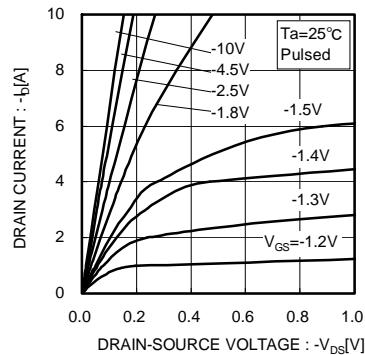


Fig.1 Typical Output Characteristics( I )

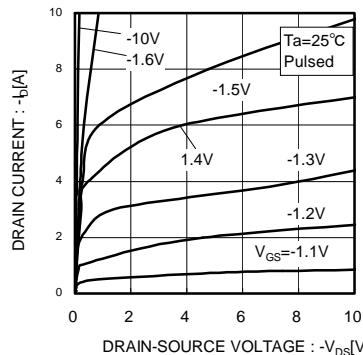


Fig.2 Typical Output Characteristics( II )

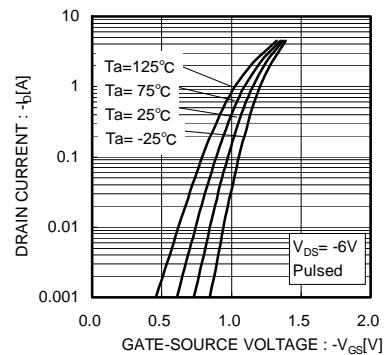


Fig.3 Typical Transfer Characteristics

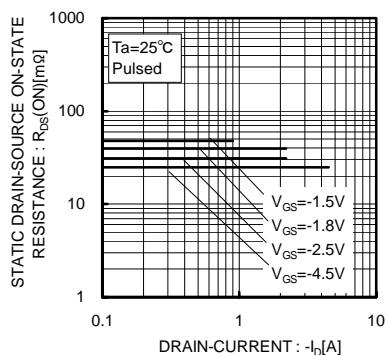


Fig.4 Static Drain-Source On-State Resistance vs. Drain Current( I )

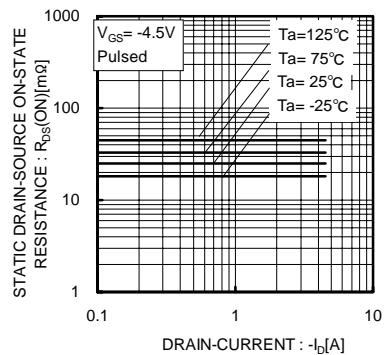


Fig.5 Static Drain-Source On-State Resistance vs. Drain Current( II )

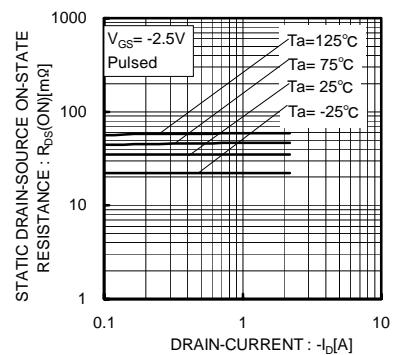


Fig.6 Static Drain-Source On-State Resistance vs. Drain Current( III )

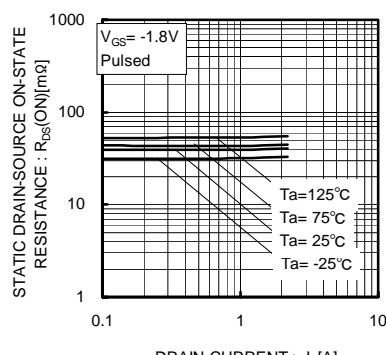


Fig.7 Static Drain-Source On-State Resistance vs. Drain Current(IV)

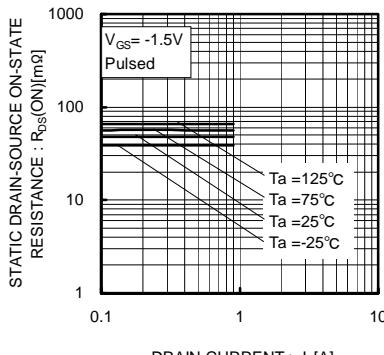


Fig.8 Static Drain-Source On-State Resistance vs. Drain Current(V)

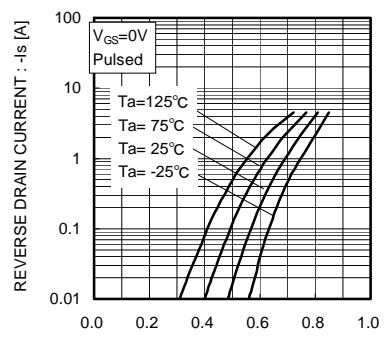


Fig.9 Reverse Drain Current vs. Source-Drain Voltage

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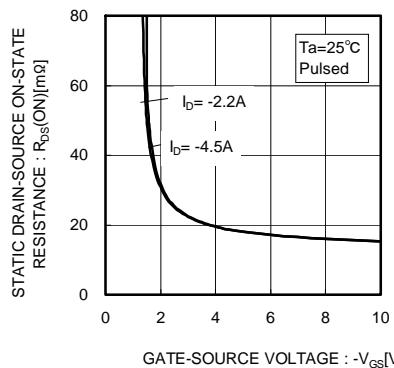


Fig.10 Static Drain-Source On-State Resistance vs. Gate-Source Voltage

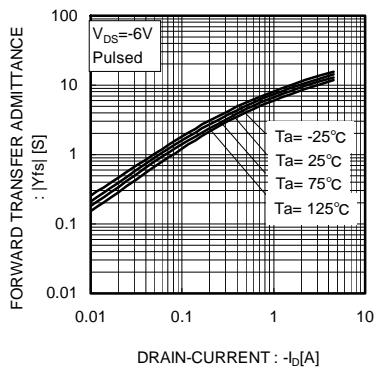


Fig.11 Forward Transfer Admittance vs. Drain Current

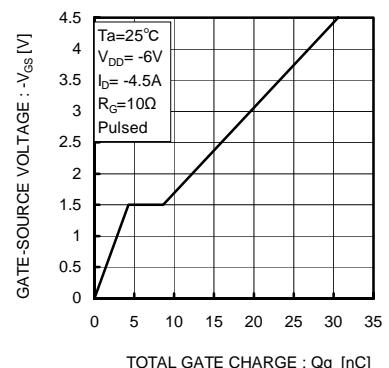


Fig.12 Dynamic Input Characteristics

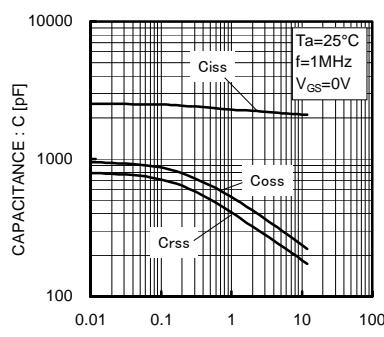


Fig.13 Typical Capacitance vs. Drain-Source Voltage

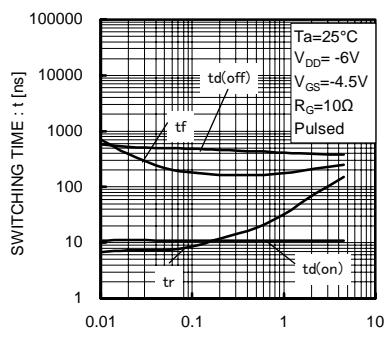


Fig.14 Switching Characteristics

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## ●Measurement circuits

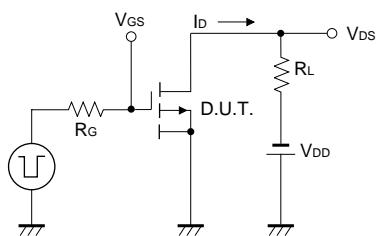


Fig.15 Switching Time Measurement Circuit

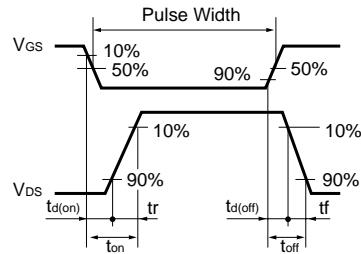


Fig.16 Switching Waveforms

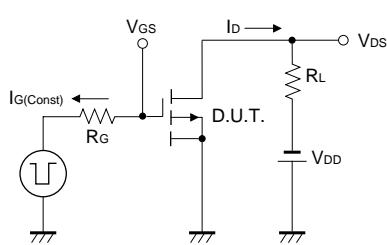


Fig.17 Gate Charge Measurement Circuit

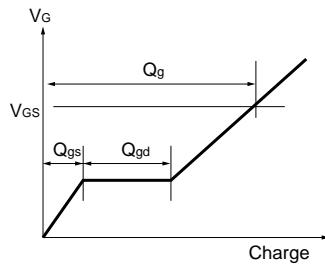


Fig.18 Gate Charge Waveform

## ●Notice

This product might cause chip aging and breakdown under the large electrified environment .  
Please consider to design ESD protection circuit.

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